

3.2.2.2 ATMS PCs**3.2.2.2.1 ATMS SDR Ephemeral PC****Table 3.2.2.2.1-1, ATMS SDR Ephemeral PC**

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
scanWeightsWc	1760	64-bit floating point	0 – 1	unitless	Weighting factors applied to hot calibration target data 2 Dimensional Array: NUM_SCAN_WC x NUM_CHANNELS Size of Dimenions(s): 10 x 22
scanWeightsCc	1760	64-bit floating point	0 – 1	unitless	Weighting factors applied to cold calibration target data 2 Dimensional Array: NUM_SCAN_CC x NUM_CHANNELS Size of Dimenions(s): 10 x 22
scanBias	16896	64-bit floating point	-5 – 5	Kelvin	Scan-angle dependent BT biases for each channel coefficient of 0th order term in brightness temperature equation $T_{corrected} = AT + B$ 2 Dimensional Array: NUM_CHANNELS x NUM_BEAM_POSITIONS Size of Dimenions(s): 22 x 96

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
beamEfficiencyCorrection	16896	64-bit floating point	0 – 1.2	unitless	Scan-angle dependent beam efficiency correction factor for each channel coefficient of 1st order term in brightness temperature equation corrected = AT + B 2 Dimensional Array: NUM_CHANNELS x NUM_BEAM_POSITIONS Size of Dimenions(s): 22 x 96
warmBiasCorrection	528	64-bit floating point	-1 - 1	a1: K a2: KC^{-1} a3: KC^{-2}	Warm bias corrections of the form $a1 + a2TR + a3TR^{**2}$ and coefficients are a1, a2, and a3. TR is the receiver temperature in degrees C. 2 Dimensional Array: NUM_BIAS_COEFFS x NUM_CHANNELS Size of Dimenions(s): 3 x 22
instr2scMatrix	72	64-bit floating point	MinFloat – MaxFloat	unitless	3x3 Instrument to Spacecraft frame transformation matrix 2 Dimensional Array: ROTATION_MATRIX_DIM x ROTATION_MATRIX_DIM Size of Dimension(s): 3 x 3
scanWeightsPrtKav	288	32-bit floating point	0 – 1	unitless	Weighting factors applied to KAV target PRT measurements 2 Dimensional Array: NUM_SCAN_PRT x NUM_PRT_KAV Size of Dimenions(s): 9 x 8

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
scanWeightsPrtWg	252	32-bit floating point	0 – 1	unitless	Weighting factors applied to WG target PRT measurements 2 Dimensional Array: NUM_SCAN_PRT x NUM_PRT_WG Size of Dimenions(s): 9 x 7
coldSpaceTbs	88	32-bit floating point	2.76 – 4.70	Kelvin	Brightness temperature of cosmic cold space, with Planck correction applied, for each ATMS channel 1 Dimensional Array: NUM_CHANNELS Size of Dimenions(s): 22
quadraticRc	1056	32-bit floating point	-0.85 – 0.854	Kelvin	Quadratic coefficients for 22 channels, four redundancy configurations (RC1, RC2, RC5 and RC6) and three cold plate temperatures (-10°, +5° and +20° C) 3 Dimensional Array: NUM_COLD_PLATE_TEMP x NUM_REDUNCDANCY_CONFIGS x NUM_CHANNELS Size of Dimenions(s): 3 x 4 x 22
shelfTemp	48	32-bit floating point	-10 – 50	Celsius	Four shelf temperatures (KKA, V, W, G) measured at each of the three cold plate temperatures tested (-10°, +5° and +20° C) 2 Dimensional Array: NUM_COLD_PLATE_TEMP x NUM_SHELF_TEMPS Size of Dimenions(s): 3 x 4

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
beamAlignmentError	792	32-bit floating point	-0.665 – 0.656	Degrees	Bore-sight(beam) alignment errors at scan positions 1, 48 and 96 3 Dimensional Array: NUM_CHANNELS x BEAM_POS_OFFSET x ATTITUDE Size of Dimenions(s): 22 x 3 x 3
coldBiasCorrection	352	32-bit floating point	0 – 0.6	Kelvin	Cold bias correction for 22 channels and four cold space view groups 2 Dimensional Array: NUM_COLD_SAMPLES x NUM_CHANNELS Size of Dimenions(s): 4 x 22
lowLimitPrt	8	32-bit floating point	245- 340	Kelvin	Lower PRT temperature limit for the KAV and WG targets 1 Dimensional Array: NUM_BAND_CATEGORIES Size of Dimenions(s): 2
uppLimitPrt	8	32-bit floating point	245- 340	Kelvin	Upper PRT temperature limit for the KAV and WG targets 1 Dimensional Array: NUM_BAND_CATEGORIES Size of Dimenions(s): 2
maxVarPrt	8	32-bit floating point	0 -10	Kelvin	Maximum temperature difference among the PRTs for the KAV and WG targets 1 Dimensional Array: NUM_BAND_CATEGORIES Size of Dimenions(s): 2

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
threeDBeamWidth	88	32-bit floating point	1 – 6	degrees	Channel-specific 3dB beamwidths 1 Dimensional Array: NUM_CHANNELS Size of Dimenions(s): 22
lunarContaminationThreshold	88	32-bit floating point	0 – 1	Kelvin	Channel-specific thresholds for cold space view temperature increase caused by lunar contamination 1 Dimensional Array: NUM_CHANNELS Size of Dimenions(s): 22
prtConvergence	4	32-bit floating point	Initially set to 0.0005	celsius	Convergence criteria for Newton-Raphson computation of temperature from PRT resistance
wtThresholdPrt	4	32-bit floating point	0 -1	unitless	Minimum normalized weight-sum required for passing the PRT data sufficiency check
wtThresholdWc	4	32-bit floating point	0 -1	unitless	Weight threshold for WC - Minimum normalized weight-sum required for passing the warm count data sufficiency check
wtThresholdCc	4	32-bit floating point	0 -1	unitless	Weight threshold for CC - Minimum normalized weight-sum required for passing the cold count data sufficiency check
dataLimits	592	32-bit floating point	minfloat – maxfloat	unitless	The valid value range for the Health & Status telemetry 2 Dimensional Array: MIN_MAX_DIM x NUM_HS_VARS Size of Dimenions(s): 2 x 74

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
spaceViewresolverCounts	64	32-bit integer	13746 - 15565	Expected Counts	Space view resolver counts - Expected count for 4 cold view positions and 4 cold scan profiles 2 Dimensional Array: NUM_COLD_SAMPLES x NUM_COLD_SCAN_PROFILES Size of Dimenions(s): 4 x 4
blackBodyResolverCounts	64	32-bit integer	35286 – 35892	Expected Counts	Black body resolver counts - Expected count for 4 warm view positions 2 Dimensional Array: NUM_WARM_SAMPLES x NUM_WARM_SCAN_PROFILES Size of Dimenions(s): 4 x 4
lowLimitWc	88	32-bit integer	0 – 65635	Count	Lower limit WC - Channel-specific lower limit for warm count 1 Dimensional Array: NUM_CHANNELS Size of Dimenions(s): 22
uppLimitWc	88	32-bit integer	0 – 65635	Count	Upper limit WC - Channel-specific upper limit for warm count 1 Dimensional Array: NUM_CHANNELS Size of Dimenions(s): 22
maxVarWc	88	32-bit integer	0 – 65635	Count	Max variance WC - Channel-specific maximum difference among four warm samples 1 Dimensional Array: NUM_CHANNELS Size of Dimenions(s): 22

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
lowLimitCc	88	32-bit integer	0 – 65635	Count	Lower limit CC - Channel-specific lower limit for cold count 1 Dimensional Array: NUM_CHANNELS Size of Dimenions(s): 22
uppLimitCc	88	32-bit integer	0 – 65635	Count	Upper limit CC - Channel-specific upper limit for cold count 1 Dimensional Array: NUM_CHANNELS Size of Dimenions(s): 22
maxVarCc	88	32-bit integer	0 – 65635	Count	Max variance CC - Channel-specific maximum difference among four cold samples 1 Dimensional Array: NUM_CHANNELS Size of Dimenions(s): 22
numThresholdPrt	8	32-bit integer	1 – 8	unitless	Number of threshold PRTs - Minimum number of "good" PRTs in a scan below which all PRTs is considered "bad" 1 Dimensional Array: NUM_BAND_CATEGORIES Size of Dimenions(s): 2
mapRc	32	32-bit integer	1 – 4	unitless	Map of RC - Map 8 Redundancy Configurations to 4 experimental cases RC1, RC2, RC5 RC6 1 Dimensional Array: NUM_MAP_RC_SIZE Size of Dimenions(s): 8

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
resolverOffset	4	32-bit integer	-200 – 200	Count	Resolver mechanical offset specific for each instrument; for the PFM, it is 91
epsilonCold	4	32-bit integer	0 - 20	unitless	Allowable deviation from the cold view expected resolver counts
epsilonWarm	4	32-bit integer	0 - 20	unitless	Allowable deviation from the warm view expected resolver counts
allowableDev	4	32-bit integer	0 - 20	milliseconds	Allowable deviation from the nominal scan period (8/3 sec)
prtLoops	4	32-bit integer	1 – 200	unitless	Maximum allowable loops for PRT temperature calculations
useQuadraticTerm	1	boolean	0 or 1	unitless	Flag indicating use of quadratic 0: do not use quadratic term 1: use quadratic term
useQuadraticTele	1	boolean	0 or 1	unitless	Flag indicating source of quadratic coefficients: 0: quadratic coefficients from ancillary file 1: quadratic coefficients from telemetry
useBeamAlignTele	1	boolean	0 or 1	unitless	Flag indicating the source of beam alignment errors: 0: beam alignment errors (22 channels) from ancillary file 1: beam alignment errors (five bands) from telemetry

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
useWarmBiasTele	1	Boolean	0 or 1	unitless	Flag indicating the source of warm bias: 0: warm bias (22 channels) from ancillary file 1: warm bias (five bands) from telemetry
useColdBiasTele	1	Boolean	0 or 1	unitless	Flag indicating the source of cold bias: 0: cold bias (22 channels) from ancillary file 1: cold bias (five bands) from telemetry
chkConsistWcCc	1	Booleam	0 or 1	unitless	Flag indicating consistency check for warm and cold counts: 0: do not check consistency 1: check consistency
chkConsistPrt	1	boolean	0 or 1	unitless	Flag indicating consistency check for PRTs: 0: do not check consistency 1: check consistency
pad	15	8-bit character	0	unitless	Padding array 1 Dimensional Array: COEFF_PAD_SIZE Size of Dimenions(s): 15

Comment [LAS1]: CP#4, ECR-CGS-185/CCR-13-997, PCR 34250 CDFCB: Pad byte size correction for ATMS SDR Ephemeral PC Table (ADR 7129)